



Terry Todd, director of the INL Fuel Cycle Science and Technology Division, and J. Stephen Herring, technical director for the High-Temperature Electrolysis, have been named INL Laboratory Fellows.

## INL names two new Laboratory Fellows

By Keith Arterburn, *INL Communications*

J. Stephen Herring and Terry Todd have been named Laboratory Fellows at Idaho National Laboratory, raising the total number of Fellows to eight distinguished researchers.

Herring and Todd join six nationally and internationally-known researchers at INL who have achieved the “career capstone recognition” level for “outstanding contributions to the scientific and engineering community.” The other individuals are William Apel, James Delmore, Paul Meakin, David Petti, Herschel Smartt and Dieter Wolf.

In making the announcement, Laboratory Director John Grossenbacher said, “Terry Todd and Steve Herring are two of the finest technology development engineers in America. They add tremendously to INL’s technical capability and reputation, while underscoring our respected heritage of nuclear and energy research. It is a pleasure to have Steve and Terry as part of our laboratory staff. My congratulations to both.”

In responding to his selection, Todd said, “I am very honored to be selected as a Laboratory Fellow and look forward to working with the Fellows to help make INL a world-class laboratory.”

Herring noted the challenging work in energy today and his recognition in being selected, saying, “Selection as a Laboratory Fellow is a personal honor, but much more a recognition of the people who have worked with me on the development of high-temperature electrolysis. These are fascinating and challenging times in the growth of nuclear energy. The twin issues of climate change and secure energy sources will require the coordinated development and use of fossil, nuclear and renewable resources in ways that we haven’t considered in the past.”

### J. Stephen Herring – Hydrogen Producer

Steve Herring currently serves as the technical director for the High-Temperature Electrolysis in the DOE Nuclear Hydrogen Initiative. He formulated and led the DOE research on nuclear production of hydrogen, proposing innovative methods in using solid-oxide electrolyzers with nuclear reactors. The research of his team has resulted in the most productive method for generating hydrogen using nuclear energy. This technology also offers the simultaneous ability to make synthesis gas from carbon dioxide and steam. Synthesis gas (a mixture of CO and H<sub>2</sub>) can then be catalyzed to produce needed transportation fuels while reducing greenhouse gas emissions.

Herring earned his doctorate in nuclear engineering from the Massachusetts Institute of Technology with a minor in corporate financial management from the Sloan School in 1979. He is fluent in German, having studied at the Swiss Federal Institute of Technology in Zürich, and has completed the Technical Japanese Language Program at the University of Washington.

Among his many nuclear research interests, Herring also challenged previous estimates of the amounts of uranium and thorium available for power production. By working with the Generation IV Fuel Cycle Crosscut Group and pursuing independent research, he produced some groundbreaking insights in an article published in the *Encyclopedia of Energy* in 2004. This effort added a stronger, more accurate scientific understanding of the availability of these materials, while demonstrating the application of research from other areas such as astrophysics, geochemical transport and neutrino detection.

Other research interests include the design of special nuclear fuels for the destruction of long-lived radioactive isotopes and applications of superconducting magnets. He has been active in the leadership of the American Nuclear Society both in Idaho and at the national level, serving in every elective office of the Idaho section and later as the national chairman of the Local Sections Committee.

Having mentored a large number of successful young researchers, Herring has nurtured research interests of many students and has served as an adjunct faculty member for the University of Idaho, Idaho State University and the University of Florida.

He has earned three patents and has another two applications in progress. In 2004, he received the Mishima Award from the American Nuclear Society for his nuclear fuel research.

## **Terry Todd – Separations Specialist**

Todd earned his doctorate in radiochemical engineering from the Khlopin Radium Institute in St. Petersburg, Russia. His specialization field is chemical separations methods, primarily in solvent extraction and ion exchange. He has worked primarily in separation of radioactive materials from spent nuclear fuel and nuclear waste to reduce cost of storage, treatment and disposal.

Currently the director of the INL Fuel Cycle Science and Technology Division, Todd also serves as the director of the Separations Program for DOE's Global Nuclear Energy Partnership. Todd was a finalist for INL Inventor of the Year in 2006, earned a Lifetime Achievement Award for Inventorship in the same year, won the Stoel Rives Idaho Innovation Award for research on medical actinium cancer therapy in 2006, captured an Outstanding Engineering Achievement Award for Uranium Extraction for Spent Fuel Reprocessing in 2005, and earned the Glenn T. Seaborg Actinide Separations Award in 2005. He also led a team that patented the Nano-Composite Arsenic Sorbent, which won several competitions, including an R&D 100 award for the material in 2006, a Nano50 Award from NASA Tech Briefs and the Federal Lab Consortium Outstanding Technology Development Award in 2006.

A Montana native, Todd has been heavily involved in other international research projects, including principal investigator for a NATO Science for Peace grant and several DOE EM-50 international programs involving Russian and Czech collaborations. He has held several leadership positions at INL in nuclear fuel cycle research for AFCI and GNEP, as well as hazardous, radioactive and high-level waste separation technology development. He is the conference chair for the 32nd Actinide Separations Conference to be held in 2008, serves on the organizing committee for the 2008 International Solvent Extraction Conference, and serves on technical program committees for several national and international conferences. Todd has participated in numerous review groups, including reviews of the Hanford tank waste programs, Savannah River separations testing and AFCI program proposals. He serves on the editorial board of the journal Solvent Extraction and Ion Exchange and has been awarded 11 U.S. patents and four Russian patents.

Candidates for Laboratory Fellows are recommended by management to the Fellows Promotion Committee, which reviews detailed promotion packages that include individual contributions, professional achievements, leadership positions held in technical organizations, letters of recommendation and an evaluation of that person's overall impact. Selection as an INL Laboratory Fellow equates to being named to an endowed chair at a major university, an elite member of a professional society or a member of a national academy.

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